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row of large cells lying in the wall of the body and extending along the mid-dorsal line from the base of the stalk to the vicinity of the arms. A second but not invariable characteristic is the presence of one or more flask-shaped organs attached to the wall of the body near the basal end of the stomach and projecting slightly forward. The third characteristic is a modification of the epithelial wall of the vestibule shown by those individuals which have developing larvæ, and consisting in part of irregular, tongue-shaped projections, whose free ends may be invaginated and filled with a yolk-like material. This substance may float out into the vestibule. The modified epithelium, as well as this yolk-like substance, forms a source of food for the developing larvæ.

Pleurivalent Spermatids and Giant Spermatozoa and their Relation to the Centrosome Question. F. C. PAULMIER. (Presented by E. B. Wilson.)

AMONG the spermatids in *Anasa tristis* occasionally occur those whose nuclei are double or quadruple the usual size, the cell body being correspondingly enlarged. While otherwise normal, the double ones have two centrosomes and two axial filaments.

These giant spermatids are due, the double ones to the non-completion of the second spermatocyte division, the quadruple ones to the non-completion of both divisions.

In the normal univalent spermatid the single centrosome persistent throughout the period of spermatocyte growth and division apparently disappears and comes into view later upon the other side of the nucleus. Is this disappearance real or only apparent?

In the bivalent spermatids the two centrosomes of the second division apparently disappear and two reappear at a later stage in the Nebenkern. In the quadrivalent

ones the four centrosomes of the first division (the original two having divided early in preparation for the second division) apparently disappear, and later four appear in the Nebenkern.

This fact that the same number of centrosomes which disappear—namely, two or four—always reappear seems to prove that the disappearance is only apparent and indicates that the centrosome persists in some form, perhaps hidden by the chromatin.

The Maturation of the Egg under Different Conditions. A. D. MEAD.

THE behavior of the *Chætopterus ovum* when subjected to different conditions shows that many of the phenomena of maturation and karyokinesis, which usually appear to be correlated with one another, are in reality independent.

When the egg is allowed to remain unfertilized in normal sea-water the maturation proceeds only as far as the metaphase of the first spindle. When, however, the egg is (a) fertilized with one spermatozoon, (b) fertilized with several spermatozoa, or (c) placed unfertilized in a solution of potassium chloride, the polar globules are extruded in a perfectly regular and uniform manner, and certain characteristic changes in the contour of the egg take place in all.

Although these phenomena are the same, the appearance of the greater part of the cytoplasm of the egg is widely different in the various cases. To illustrate: The formation of the second polar globule, the reconstitution of the egg-nucleus and its migration toward the egg center, occurs in the same manner whether (a) the egg contains a sperm-nucleus and one huge sperm-amphiaser, whether (b) it contains a number of sperm-nuclei and sperm-amphiasers, or whether (c) it contains no sperm-nucleus or radiation in the cytoplasm.

Some Activities of the Polar Bodies in Cerebratulus. E. A. ANDREWS.